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ABSTRACT

These instructional objectives have been selected from materials submitted to the Curriculum Laboratory of the Graduate School of Education at UCLA. Arranged by major course goals, these objectives are offered simply as samples that may be used where they correspond to the skills, abilities, and attitudes instructors want their students to acquire. These objectives may also serve as models for assisting instructors to translate other instructional units into specific measurable terms. (MB)

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Instructional Objectives for a Junior College Course in Computer Appreciation

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University of California
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COMPUTER APPRECIATION

Unit I -- What Are Computers and What Do Computers Do (3 weeks)

The computer seems to be omnipresent today. Since its inception in the middle of this century, it has become increasingly useful in many areas. To establish an understanding of the extents and limits of its usefullness, it would be helpful to look briefly at its history and its structure, followed by a survey of popular computer applications.

I. Goal: The student will know the primary stages in the historical development of the computer.

Objective: 1. Given a list of 4 types of computers, he will put them in chronological order.

100

2. Given a list of computers and another list of computer characteristics, he will match the characteristics to the computers which they describe.

80

3. Given a list of devices, he will indicate those which are commonly parts of a computer.

80

4. Given a list of descriptions of computers, he will indicate those which are digital and those which are analog.

70

II. Goal: The student will understand the applications that can be performed by a computer.

Objective: 1. Given a list of descriptions of tasks, he will select those tasks which can be performed by a computer at the present.

75

2. Outside of class, the student will be able to find a magazine article which describes a computer application. He will summarize the application in less than 250 words.

100

3. After having seen a film about the development and potential uses of the computer, he will describe orallly, in class discussion, or in writing (in less than 50 words) at least one of the main goals of the film.

100

4. Outside of class, he will attend a lecture-demonstration of a graphics computer application in medicine.

100

5. He will voluntarily attend (on his own time) one other non-required lecture-demonstration of computer graphics applications that is scheduled for the term.

100

Unit II -- Computer Hardware (3 weeks)

The computing machine is composed of parts (hardware) which have specialized functions. These parts are somewhat analogous to parts of the human body. To understand how the computer functions as a whole, it is important to be aware of the function(s) of each of its parts. Furthermore, to be able to converse with others about the computer, it is important to know the associated terminology.

The concepts in this unit and the next unit will be presented with the aid of an automated device which represents a simulated computer. The device is called the SSC (standing for Sokolow's Simulated Computer). It is implemented using the IBM System/360 and some of its peripheral equipment; it is in fact very similar to that system though on a much smaller scale. The SSC provides an interactive approach to learning the fundamental concepts associated with many types of digital computers.

I. Goal: The student will understand the functions of the basic components of the computer.

Objective: 1. Given a list of the components of the SSC, he will describe the function(s) of each in 20 words or less.

80

2. Given an unlabeled diagram of the SSC, he will label the parts.

90

3. Given a list of SSC console operations and a description of a task, he will list the operations in such an order that the task can be performed.

80

4. Outside of class, he will attend a field trip to a large computer installation.

100

Unit III -- Computer Software (6 weeks)

The computer software enables the human to use the computer hardware efficiently. The computer software is made up of computer languages. A computer language is actually just a set of instructions. The instructions generally direct the computer to process data. The ease with which data can be processed today has directly contributed to the increase of the use of the computer.

The computer language that is used for the SSC is composed of 11 different instructions. These instructions are similar to those of other computer machine languages. Thus, learning to use this small set of instructions greatly facilitates the understanding of other much larger sets of instructions.

I. Goal: The student will understand the instructions of the SSC computer language.

Objective: 1. Given a list of operation codes from the SSC language, he will describe the functions of each in 20 words or less.

80

2. Given sets of not more than three SSC instructions and given a diagram of a storage box, he will fill-in the cells according to the specifications in the instructions.

70

3. Given 2 sets of specifications, he will construct SSC instructions for each set.

70

4. Given a program of not more than 15 SSC instructions, he will determine the problem which the program is solving.

100

5. Given a problem, he will flow chart and then code a program in the SSC language to solve the problem.

100

6. Given a problem, he will flow chart and then code a program in the SSC language using a subroutine to solve the problem.

100

7. He will operate the program (written in #6) on the SSC to check the program's validity (outside of class).

100

II. Goal: The student will understand the instructions in the PL1 computer language which correspond to the instructions in the SSC computer language.

Objective: 1. Given sets of not more than three SSC instructions, he will translate these instructions into PL1 instructions.

70

2. Given sets of not more than three PL1 instructions, he will translate these instructions into SSC instructions.

70

3. Given sets of specifications, he will construct PL1 instructions for each set.

70

4. Given a program of not more than 15 PL1 instructions, he will determine the problem which the program is solving.

100

5. Given a problem, he will flow chart and then code a program in the PL1 language to solve the problem.

100

6. Given a problem, he will flow chart and then code a program in the PL1 language using a subroutine to solve the problem.

100

Unit IV -- The Future Impact of Computers on Society (3 weeks)

The computer may some day be as common in the average household as is the telephone and television today. It is interesting to think of some of the things the computer may be doing for us in the future.

I. Goal: The student will understand the impact that computers may have on society in the future.

Objective: 1. Outside of class, he will write a paper of 250-1000 words describing an application in which the computer is not primarily involved today but in which it could be primarily involved in the forseeable future.

100

2. He will read the paper (written in objective #1) orally to the class and then will conduct a discussion of not more than 10 minutes concerning the implications of the application described in the paper.

100

3. He will volunteer to participate at least once in a guest lecturer's discussion concerning the topic: "Can the computer take over the world?"

100

II. Goal: The student will know whether he would like to pursue the study of computers further.

Objective: 1. He will choose whether he would like to pursue the study of computers further, and he will give (in writing) at least one reason to explain his choice.

100

2. If he chose to pursue the study of computers further (objective #1), he will register for another course on computers within one year.

100